Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, DC 20554

In the Matter of	
Federal-State Joint Board on Universal Service	CC Docket No. 96-45
Forward-Looking Mechanism for High Cost Support for Non-Rural LECs	CC Docket No. 97-160
	DA 98-1587

COMMENTS OF BELL ATLANTIC[1] ON MODEL PLATFORM

While the bureau's latest effort to construct customer location and outside plant modules avoids some of the shortcomings in previous proxy models, it once again demonstrates that proxy models cannot accurately calculate costs at the wire center level. Since the bureau released these modules with sample input data for the state of Maryland, Bell Atlantic was in the unique position of being able to compare the results of the bureau's approach with actual data for each wire center in Maryland. Our analysis demonstrates that there are unexplainable variations at the wire center level in the number of lines and the average loop lengths, and that model outputs are contrary to the results one would expect based on the bureau's design methodology.

[1] The Bell Atlantic telephone companies ("Bell Atlantic") are Bell Atlantic-Delaware, Inc.; Bell Atlantic-Maryland, Inc.; Bell Atlantic-New Jersey, Inc.; Bell Atlantic-Pennsylvania, Inc.; Bell Atlantic-Virginia, Inc.; Bell Atlantic-Washington, DC, Inc.; Bell Atlantic-West Virginia, Inc.; New York Telephone Company and New England Telephone and Telegraph Company.

The Commission should not incorporate these modules in a proxy model platform without releasing input data for the rest of the country to determine if these anomalies, and/or others, occur in other states. Bell Atlantic will continue to work with the bureau to identify areas for improvement in the bureau's model. However, at this point, proxy model data should be considered, if at all, only at a significant level of aggregation above the wire center level.

I. The Bureau's Model Incorporates Some Improvements Over Previous Models.

The bureau's customer location and outside plant modules address several deficiencies in previous models that were noted by Bell Atlantic and others. For instance:

- the customer location module limits the redistribution of customers from their geocoded locations by assigning them to small microgrids. This is far superior to the HAI model, which redistributes customers to hypothetical locations that are much farther from their actual locations;
- the algorithms for clustering customers into serving areas are much more sophisticated, as they optimize the costs of both cable and structure in designing serving areas;
- in deciding what technology to use, the model considers both installation and ongoing operating costs of each technology to minimize "lifetime" costs;
- the model adjusts feeder distances by factors which depend on the minimum and maximum slope of the terrain within a cluster;
- the model includes a "road factor" to adjust geometrical loop lengths into actual route distances, which is intended to account for the existing road network and other terrain factors; and
- the model is flexible and allows for many user inputs, such as the type of technology used and the distances over which that technology should be applied. This is in contrast to the other proxy models, which incorporate fixed algorithms that dictate technology choices.

These features of the bureau's model further illustrate why the Commission cannot adopt either the HAI model or the Benchmark Cost Proxy Model, which lack some or all of these features. The bureau's model employs a better method of optimizing outside plant, and it allows users to incorporate realistic design parameters.

II. The Bureau Should Incorporate Further Refinements To Its Model.

Although the bureau has tried to improve upon the existing models, there are several areas where further work is needed.

Customer Location Data. The model uses geocoded data, but also can incorporate census data for non-geocoded customers. The bureau asks for comments on how the model should locate customers in the most accurate manner, and how it should distribute non-geocoded customers, proposing alternatives of distributing those customers along roads, on the boundaries of the Census blocks, or randomly. Public Notice, p. 3.

Clearly, geocoded data provide the best customer location for purposes of constructing a proxy model, but both Bell Atlantic and other commenters have noted that geocoded data are not, and likely will not, be available for all customers. This is especially true for customers in rural areas, who are likely to have the highest-cost loops. For non-geocoded customers, the best approach is to distribute those customers along roads in the customers' Census block, as is done in the Benchmark Cost Proxy Model. Non-geocoded customers are most likely to be customers in rural areas who have rural

route addresses (which cannot be geocoded) rather than street addresses. Such customers are most likely to be located along roads.

Distributing such customers along the Census block boundary, as is done in the HAI model, would not represent real world conditions. The alternative of randomly distributing non-geocoded customers throughout the Census block would produce distortions, as geocoded customers are most likely to those nearest towns (and therefore have low-cost loops), while non-geocoded customers are likely to live in rural areas (farther from the towns, and with higher-cost loops).

Grouping Customers. The model's approach to clustering customers into serving areas does not take into account the fact that unpopulated areas may experience population growth in the future, and that a carrier would need to build feeder plant to serve customers in such areas in the future as well as customers in existing areas. HCPM 2.6 Documentation (July 1, 1998), p. 11. The model should include a factor for unpopulated areas adjacent to populated areas to accommodate future growth.

Designing Distribution and Feeder Plant. While the bureau's loop design module adds slope to the terrain data used in previous models (such as bedrock depth, rock hardness, soil type, and depth of water table) to determine the cost of outside plant, it still ignores actual terrain features such as roads, rivers, mountains, and available rights of way, that determine the routing and design of feeder and distribution facilities. The bureau proposes to address this problem by adding a "road factor" for feeder plant to convert distances generated by the model to actual route distances that would be possible

given the existing road network and other terrain factors (HCPM 2.6 Documentation, p. 15). However, this is no panacea for a model that simply fails to take into account significant factors that vary widely between different wire centers. To be accurate, a "road factor" would have to be computed separately for each wire center to reflect the unique terrain characteristics of that wire center. This would be labor-intensive and very expensive. In addition, a "road factor" would also have to be applied to distribution plant to reflect the same terrain factors.

We note that the model does not incorporate caps on loop investment to account for more cost-effective wireless technologies. An upper end cap would be appropriate to avoid having the high cost fund assign excessive funding to certain wire centers for loops that are far more expensive than wireless or other technological alternatives.

III. The Bureau's Model Produces Unexplainable Results At The Wire Center Level.

To test the accuracy of the model, Bell Atlantic compared the model results to its actual data for the test state of Maryland. These data are shown in the attachment for each wire center.[2] The data illustrate certain anomalies that would preclude use of this model to calculate the level of high cost support.

First, Bell Atlantic compared the number of lines produced by the model for each wire center to the actual number of lines. Both the Commission and the Joint Board

[2] Because these data are confidential, Bell Atlantic is submitting the attachment under a request for confidential treatment.

found earlier that a model should not require a "closing factor" of more than 10 percent to match the model line count at the wire center level to the actual line count. Forward-Looking Mechanism for High Cost Support for Non-Rural LECs, 12 FCC Rcd 18514, ¶ 53 (1997). While the bureau's model calculates a line count for the entire state that closely matches the actual line count, the difference between the model and the actual line count at the wire center level in many cases is well over 100 percent. This suggests that there may be something wrong in the way that the bureau's model identifies wire center boundaries, assigns customers to wire centers, clusters customers into serving areas, estimates numbers of lines per customer location, or geographically distributes non-geocoded customers.

Next, Bell Atlantic compared loop lengths produced by the model to actual loop lengths by wire center from last year's data request. The model produces about a 16 percent greater average loop length at the statewide level than Bell Atlantic's actual average loop length. This should not happen, since the model is biased towards underestimating loop lengths, as it does not take into account actual road networks, natural obstacles, available rights of way, or other factors that prevent outside plant from being installed in neat geometrical patterns. Indeed, the model is designed to allow the user to specify a "road factor" that would increase feeder distances to take into account the existing road network and other terrain factors. HCPM 2.6 Documentation, Section 4.2.2 and n.24. Since Bell Atlantic ran the model with a road factor of 1, the model loop lengths, in theory, should not have exceeded actual loop lengths.

Moreover, the differences between model loops and actual loops at the wire center level vary by wide extremes – in some wire centers, the model lengths are twice the actual lengths, while in others the model produces loops that are much shorter than the actual loops. These variations cannot be explained, or remedied, by applying a simple "road factor" or other multiplier to the model's theoretical loop lengths. Rather, it suggests that there is some flaw in the wire center boundaries, the identification of customer locations, the clustering algorithms that assign customers to wire centers, or the algorithms for designing feeder and distribution plant.

These anomalies demonstrate once again that proxy model results are not reliable, and cannot be used, at the wire center level. A model that calculates loop costs at a wire center with a 100 percent degree of error can have very deleterious effects on universal service. Underestimating support for a wire center, based on calculations of loop lengths that are much shorter than actual loops, would discourage both entry by new carriers and additional investment by the incumbent carrier. Overestimating support for a wire center, based on an unrealistically long average loop length, would overstate support and encourage new entry for the sole purpose of gaining a windfall from the universal service fund.[3] Both results would harm, rather than promote, the goal of universal service. For these reasons, the Commission should use proxy model costs, if at all, only at a

[3] At the extreme, unreasonably high levels of universal support that exceeded actual cost in a wire center could permit a new entrant to offer "free" telephone service, while the incumbent local exchange carrier would be required to continue offering service at state-wide average rates. This would cause erosion of the incumbent's customer base even if it were the most efficient provider, solely because of a miscalculation in the amount of universal service support.

sufficiently high level of aggregation to cancel out the inaccuracies at the wire center level.

IV. Conclusion

The bureau's model is a significant step forward, as it remedies many of the deficiencies in the previous models. However, at this point, it simply demonstrates once again that proxy models do not provide sufficiently reliable results to determine universal service support below the study area level.

Respectfully submitted,

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ATTACHMENT

(Submitted Under Request for Confidential Treatment)

CERTIFICATE OF SERVICE

I hereby certify that on this 28th day of August, 1998 a copy of the foregoing "Comments of Bell Atlantic on Model Platform" was served on the parties on the attached list.

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